NEW HAMPSHIRE DRINKING WATER
&GROUNDWATER TRUST FUND

The Best Source Water Protection: Land Conservation

Paul Susca, NH Department of Environmental Services May 16, 2019

INFORMATION RESOURCES

Handouts:

- “2019 GRANT ROUND”
- “New Hampshire’s High-Priority Water Supply Lands”

Search the web for “NH DWG Trust Fund”

- Top: “Applicants & Recipients”
  - Non-Construction Projects
    - Rules
    - Application forms
    - OneStop Data Mapper Instructions

JAMESTOWN SETTLEMENT

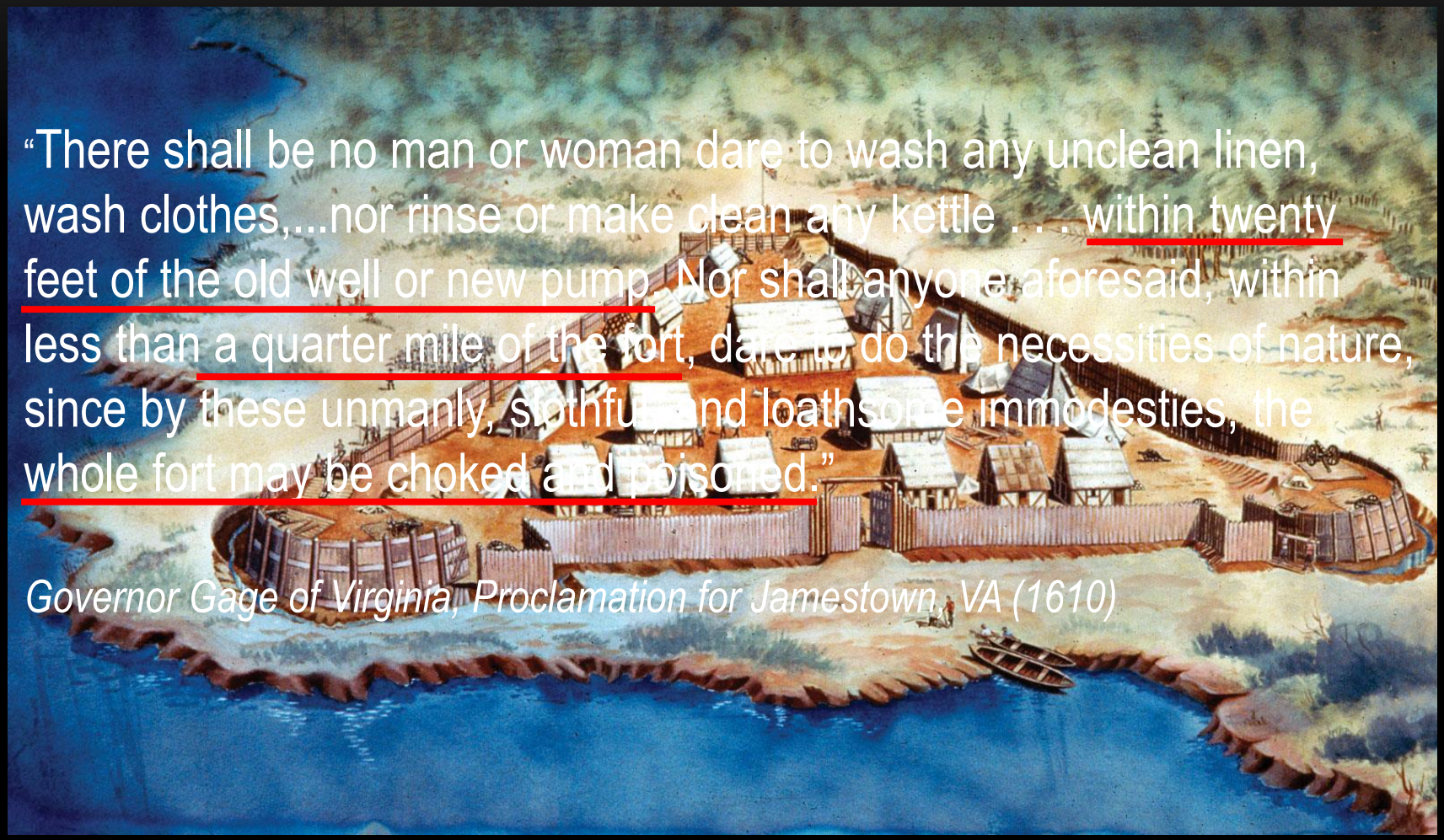
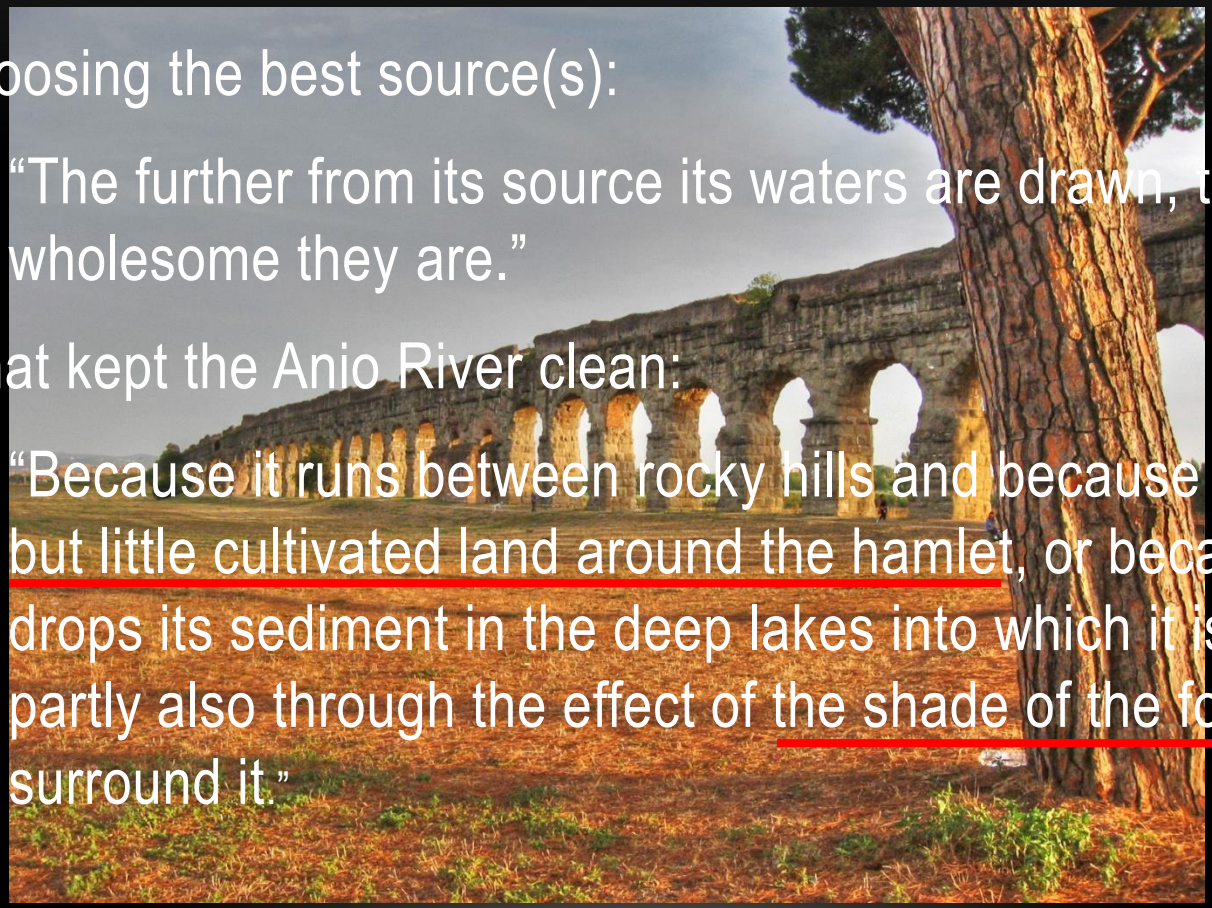


Image source: latinamericanstudies.org

SOURCE WATER - ROMAN EMPIRE



- Choosing the best source(s):
  - "The further from its source its waters are drawn, the less wholesome they are."
- What kept the Anio River clean:
  - "Because it runs between rocky hills and because there is but little cultivated land around the hamlet, or because it drops its sediment in the deep lakes into which it is taken; partly also through the effect of the shade of the forests that surround it."

Source: Text: Sextus Julius Frontinus, 97 AD; translated by Clemens Herschel, 1899; published by NEWWA, 1973. Photo: iessi via Flickr.com

The Multiple Barrier Approach to Protecting Public Health

The multiple barrier approach provides "defense in depth" against waterborne pathogens and chemical contaminants that can cause a variety of illnesses and conditions, some of them potentially fatal. By erecting barriers against these contaminants at each step in the process from raw, untreated source water to the delivery of treated finished water, system owners and operators can protect the health and well being of the people who rely on them for potable water.

Source Water

Barriers: Selecting and protecting the best source of supply.

Treatment

Barriers: Installing treatment methods, implemented by a certified operator, that will improve the quality of the source water.

Storage and Distribution

Barriers: Constructing, operating, and maintaining well-engineered storage facilities and distribution systems.

Monitoring and Public Information

Barriers: Providing consumers with information on water quality and health effects.

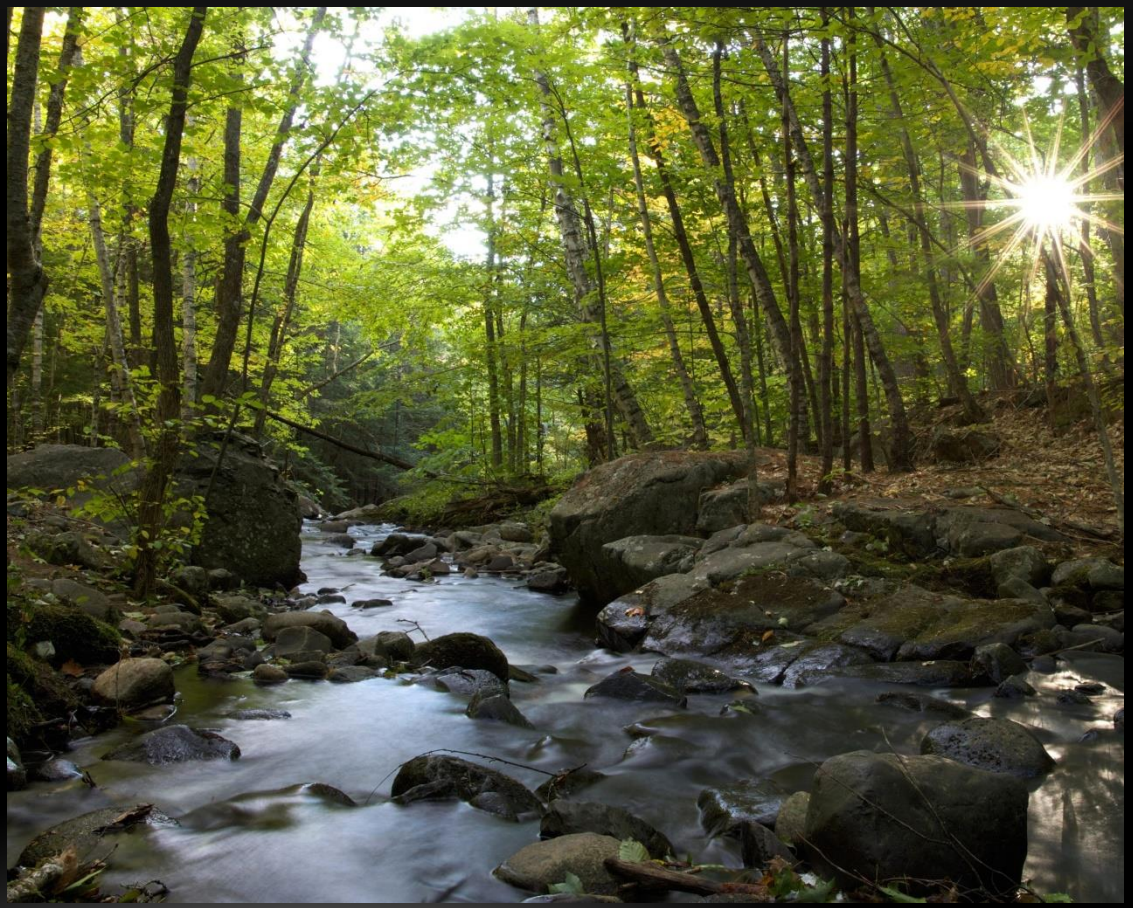
Figure 8-6. Multiple-barrier approach to safe drinking water. *Source: USEPA, 2003.*

USE ALL TOOLS

- Land conservation
- Protective zoning
- Best management practices
- Public education

LAND AND CLEAN WATER

- Intercept rain
- Slow runoff
- Prevent erosion
- Slowly feed streams
- No pollution sources!



LAND AND DRINKING WATER

Forest cover ⬆ 10%

=

Water treatment costs ⬇ 20%

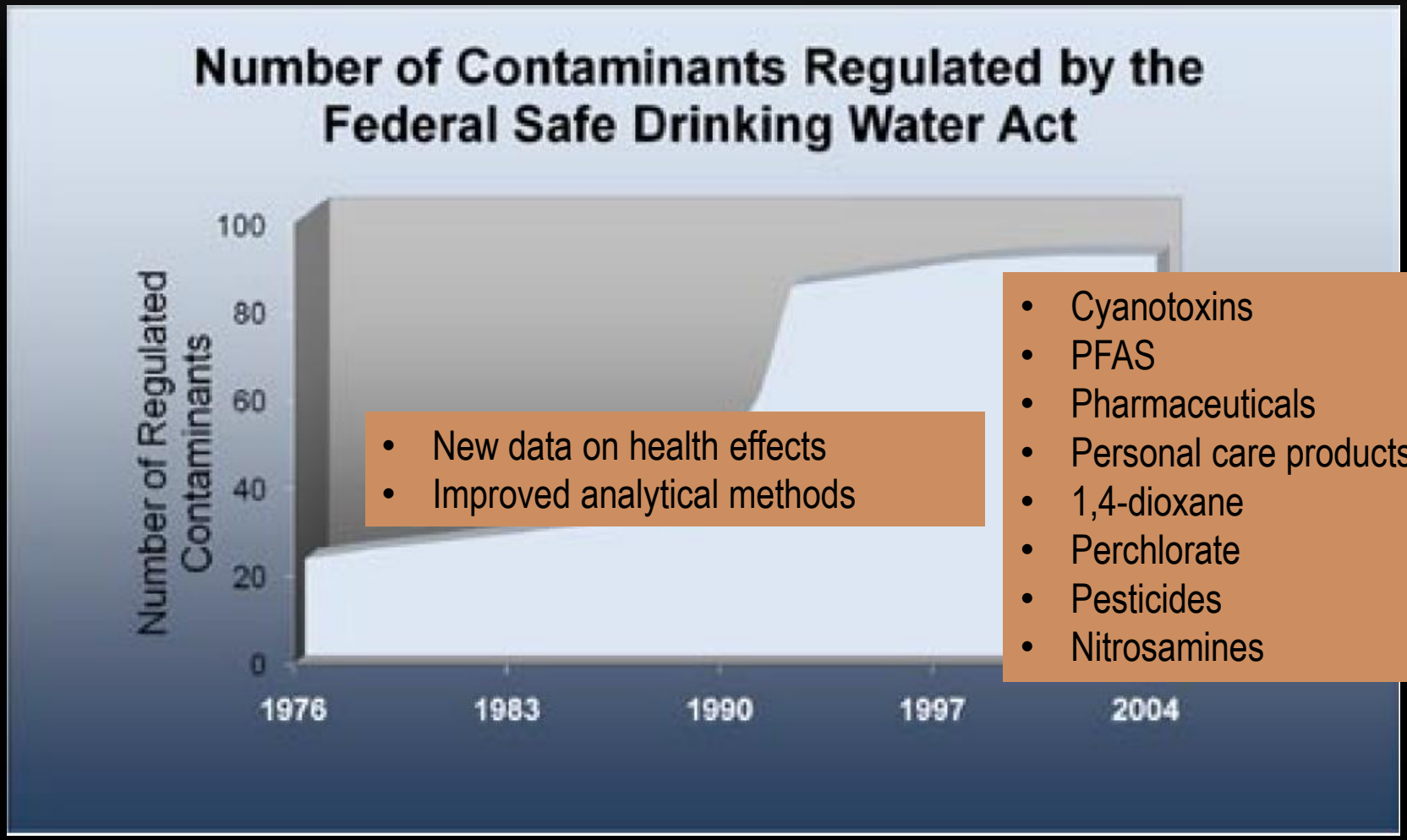
Protecting forested watersheds is smart economics for water utilities

PROTECTING AND SUSTAINABLY MANAGING FORESTED WATERSHEDS IS AN APPROACH THAT, WHEN USED AS A COMPLEMENT TO TRADITIONAL INFRASTRUCTURE, MAY NOT ONLY REDUCE COSTS BUT ALSO HELP SECURE NEW FUNDING STREAMS.

The breathtaking $1 trillion estimated price tag to repair and expand our nation's drinking water infrastructure is both sobering and compelling (LaFrance, 2013). To address this costly issue, some water utilities and the communities they serve are turning to a solution nearly as old as our nation itself—protecting forested watersheds. Increasing evidence suggests that healthy forests produce water that is less expensive to treat, transport, and store. These same forests also provide a plethora of other cultural, economic, and environmental benefits. And with real estate prices in many areas being lower as a result of the Great Recession, now is the time to protect and sustainably manage the lands and forests that supply our potable water.

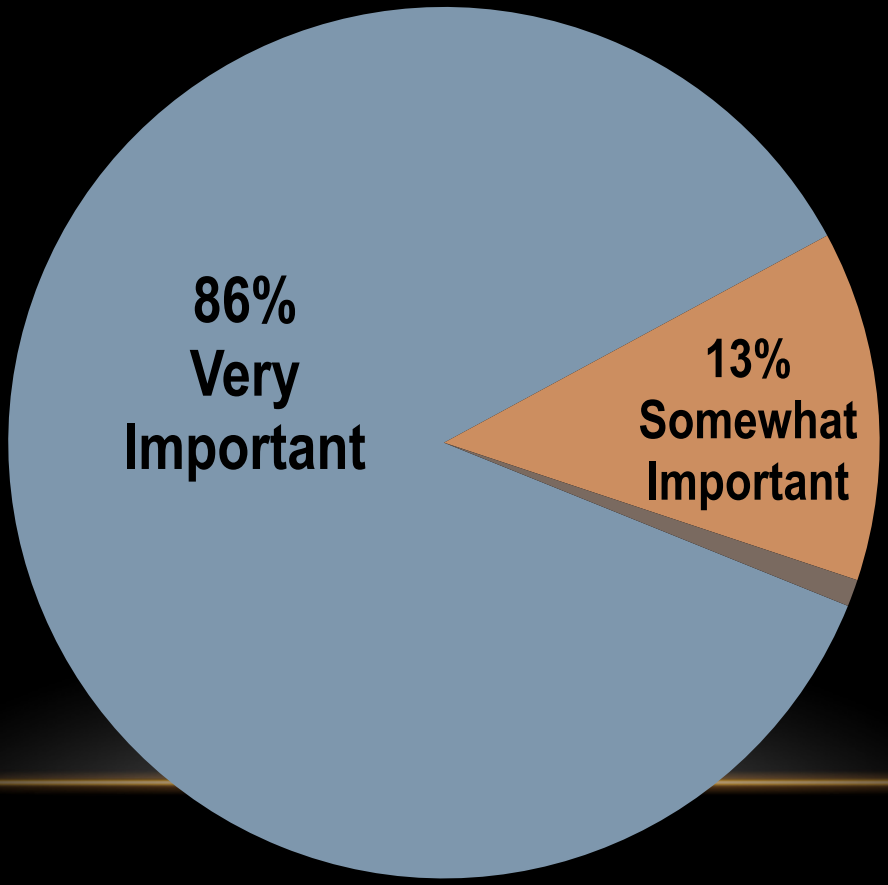
The stakes are high. According to the 2008 report of the National Research Council, Hydrologic Effects of a Changing Forest Landscape (NRC, 2008), "the forests cycle water from precipitation through soil and ultimately deliver it as streamflow that is used to supply *nearly two-thirds of the clean water supply in the United States*." Changes in forested headwaters, including tributary streams

THINKING AHEAD ABOUT CLEAN SOURCE WATER



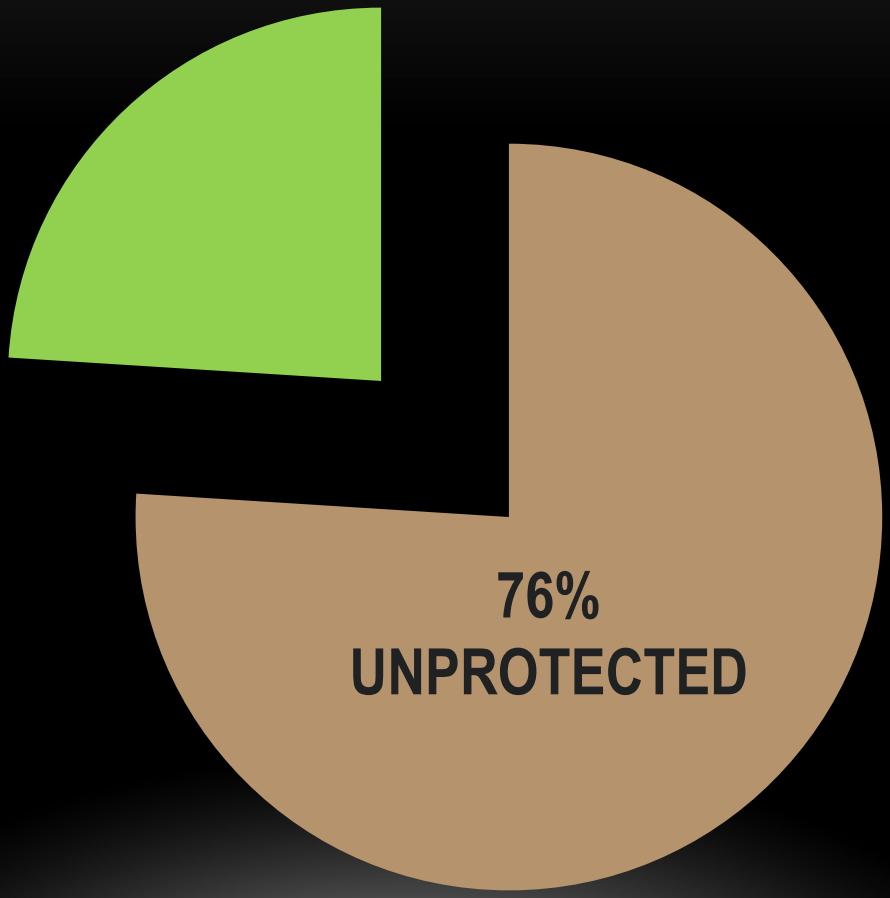
PUBLIC SUPPORT FOR LAND CONSERVATION

Water quality protection ranked highest

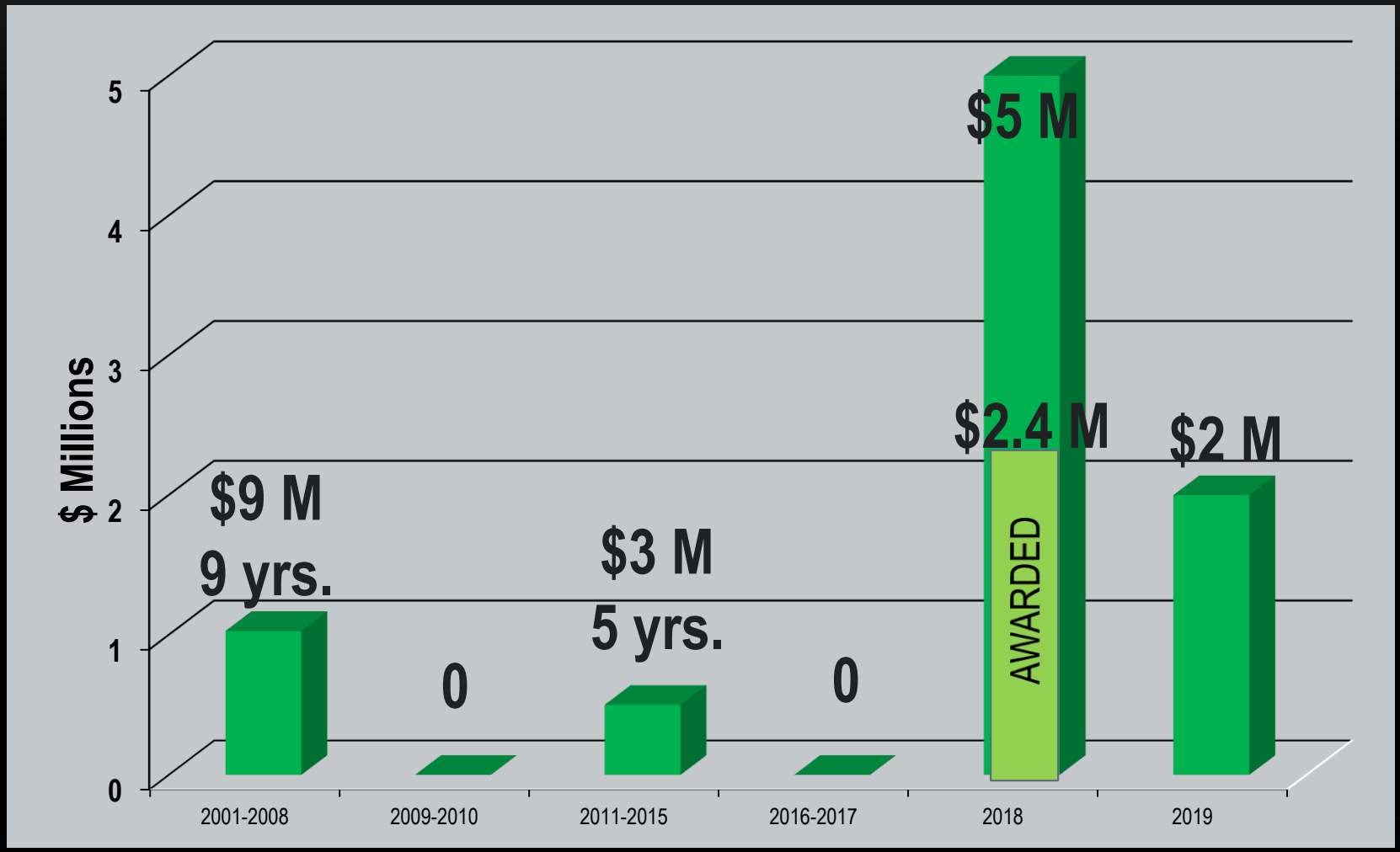


Source: NH Conservation Attitude Survey, 2012

NH WATER SUPPLY LAND



ANNUAL FUNDING FOR WATER SUPPLY LAND

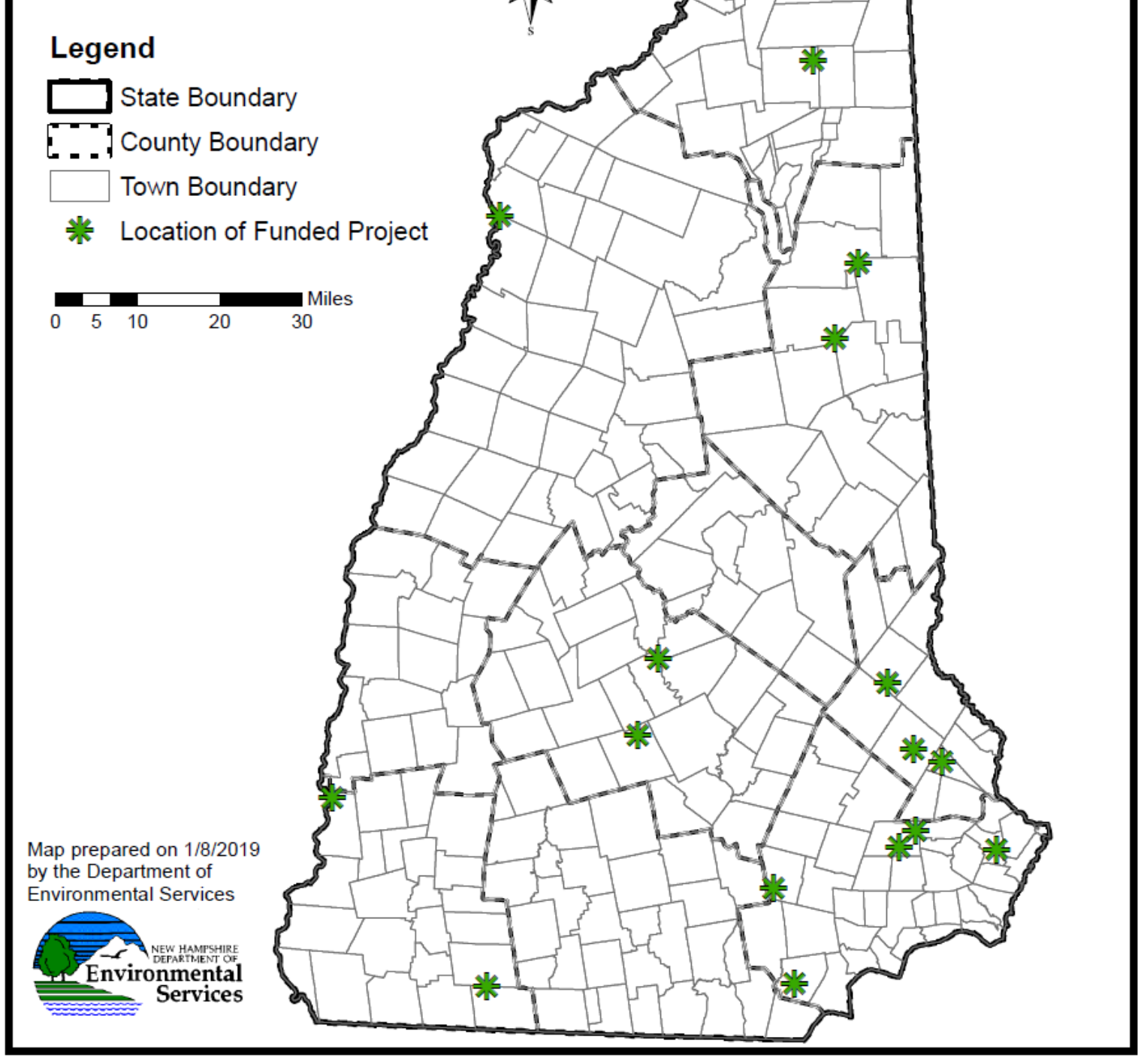


NEW HAMPSHIRE DRINKING WATER &GROUNDWATER TRUST FUND

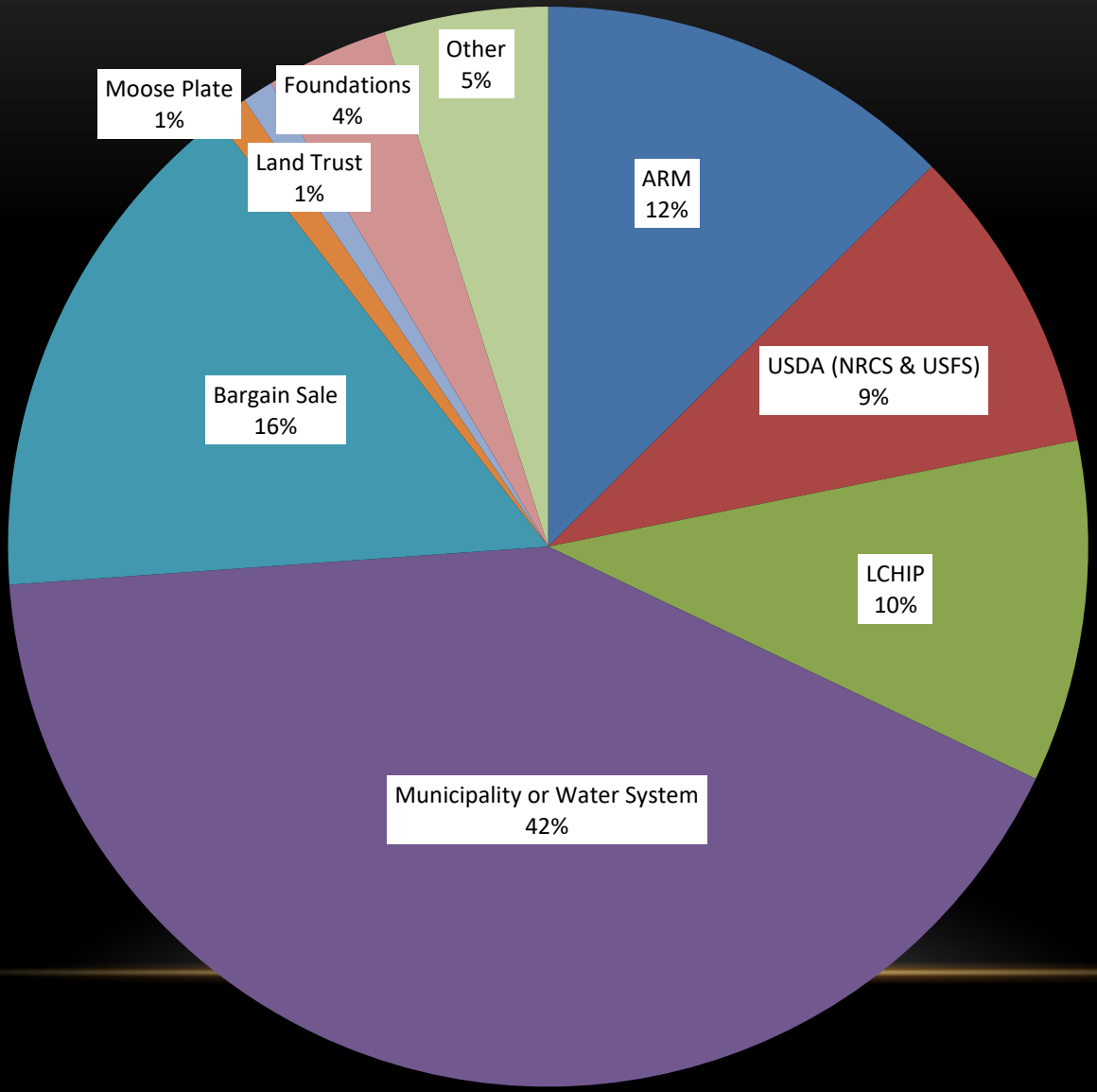
NH Drinking Water and Groundwater Trust Fund - 2018 Water Supply Land Protection Grant Round

Projects Awarded Funding by Advisory Commission - October 1, 2018

Applicant	Project Name	Town(s)	Eligible Acres	AMOUNT AWARDED
Ammonoosuc Conservation Trust	Jean Chamberlain	Bath/Haverhill	45	$73,700
Barrington, Town of	Haley/Rubenstein/Panish	Barrington	153	$190,000
Five Rivers Conservation Trust	Chesley	Hopkinton	6	$82,000
Gorham, Town of	Ice Gulch & Perkins Brook	Randolph/Gorham	3497	$300,000
Monadnock Conservancy	Bearce Conservation Easement	Jaffrey/Rindge	64	$35,000
Monadnock Conservancy	Wood Farm Easement	Walpole	29	$70,000
Portsmouth, City of	Chick Property	Greenland	3	$90,000
Society for the Protection of NH Forests	Parker Farms	Auburn	87	$375,000
Society for the Protection of NH Forests	Stillhouse Forest	Canterbury/Northfield	234	$150,000
Southeast Land Trust	Lamprey River	Epping	163	$271,787
Southeast Land Trust	Governor's Run	Epping	18	$200,000
Southeast Land Trust	Rochester	Farmington	315	$410,000
Upper Saco Valley Land Trust	World Fellowship Center	Albany	64	$29,550
Upper Saco Valley Land Trust	Lucy Brook Farm	Conway	41	$84,000
Windham, Town of	Clyde Pond	Windham	25	$26,450
		TOTAL	**4,744**	**$2,387,487**

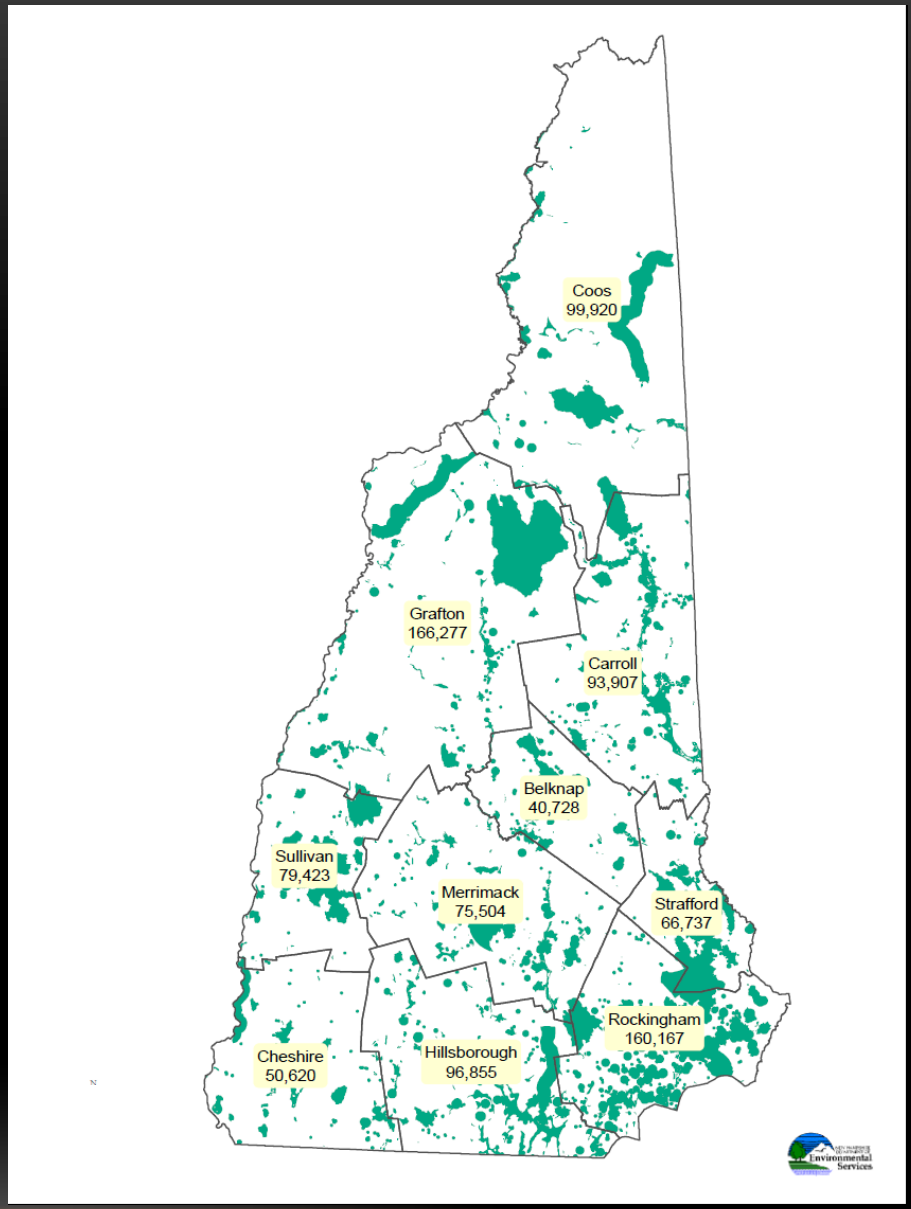

Legend
State Boundary
County Boundary
Town Boundary
Location of Funded Project
Miles
0 5 10 20 30
Map prepared on 1/8/2019
by the Department of
Environmental Services
NEW HAMPSHIRE
DEPARTMENT OF
Environmental
Services

SOURCES OF MATCH IN 2018 ROUND



2019 GRANT ROUND ELIGIBLE PROJECTS

- Eligible land
  - WHPAs
  - HACs
  - Future sources, if…
- Uncontaminated, unless…
- Permanent protection
- 50% match
- $500 K maximum grant



PERMANENT PROTECTION

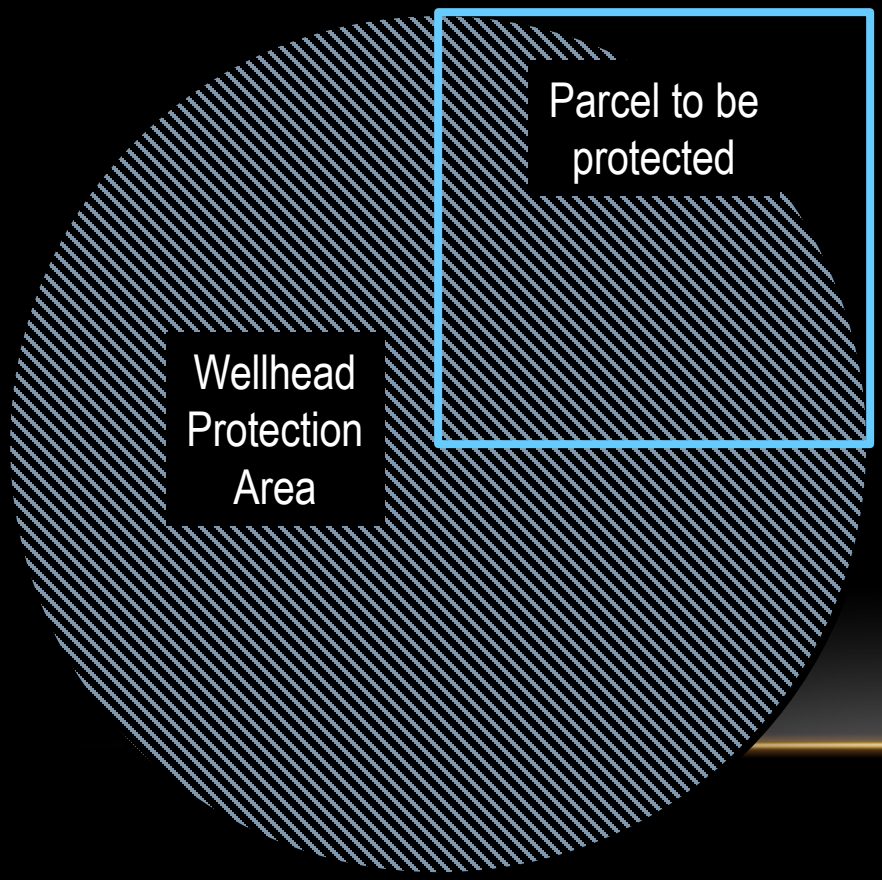
- What: permanent restrictions on how the land can be used regardless of who owns it now or in the future. Ownership by PWS, municipality, or land trust is not enough.
- How:
  - Conservation Easement
    - Held by municipality, land trust, other conservation organization, state or federal agency,
    - With third-party right of enforcement by State of New Hampshire
  - Deed restriction
    - With third-party right of enforcement by State of New Hampshire

TOTAL (ELIGIBLE) PROJECT COSTS

- Land or interest in land
- Associated legal and transaction costs (grant and match properties), including:
  - Appraisal
  - Survey
  - Baseline documentation report
  - Title examination
  - Environmental site assessment
  - Stewardship plan
  - Legal fees, recording fees, closing costs
  - Stewardship fee

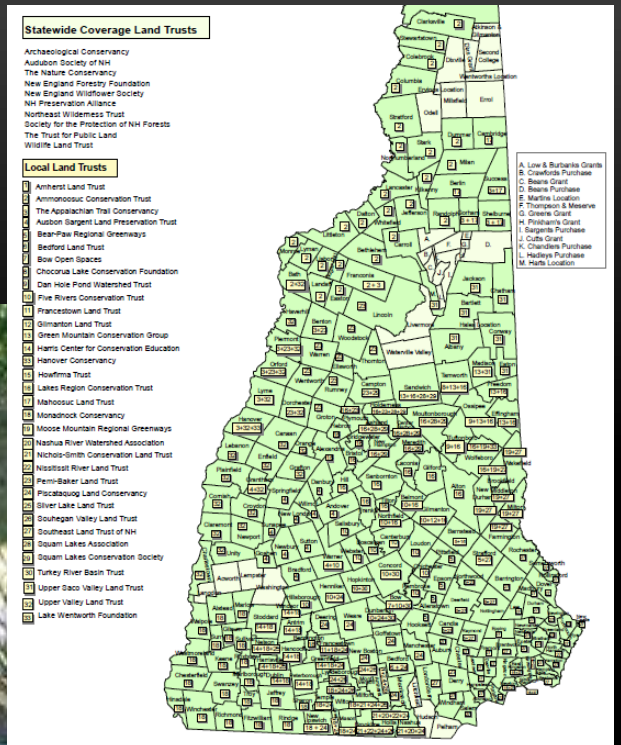
TOTAL PROJECT COST
X PORTION OF LAND ELIGIBLE
= ELIGIBLE PROJECT COST

$1,000,000
X .78
=$780,000

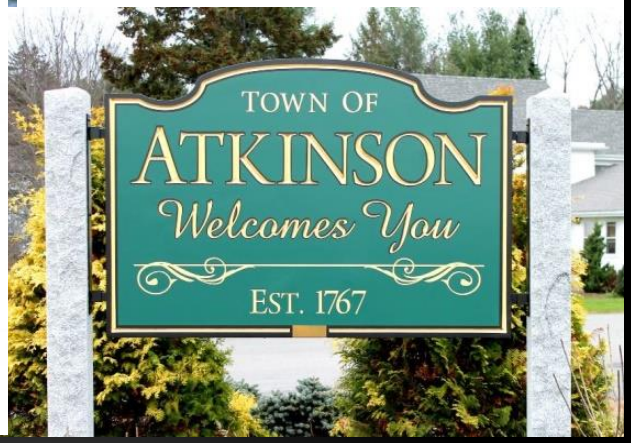


MAXIMUM GRANT = $390,000
MINIMUM MATCH = $610,000

ELIGIBLE APPLICANTS



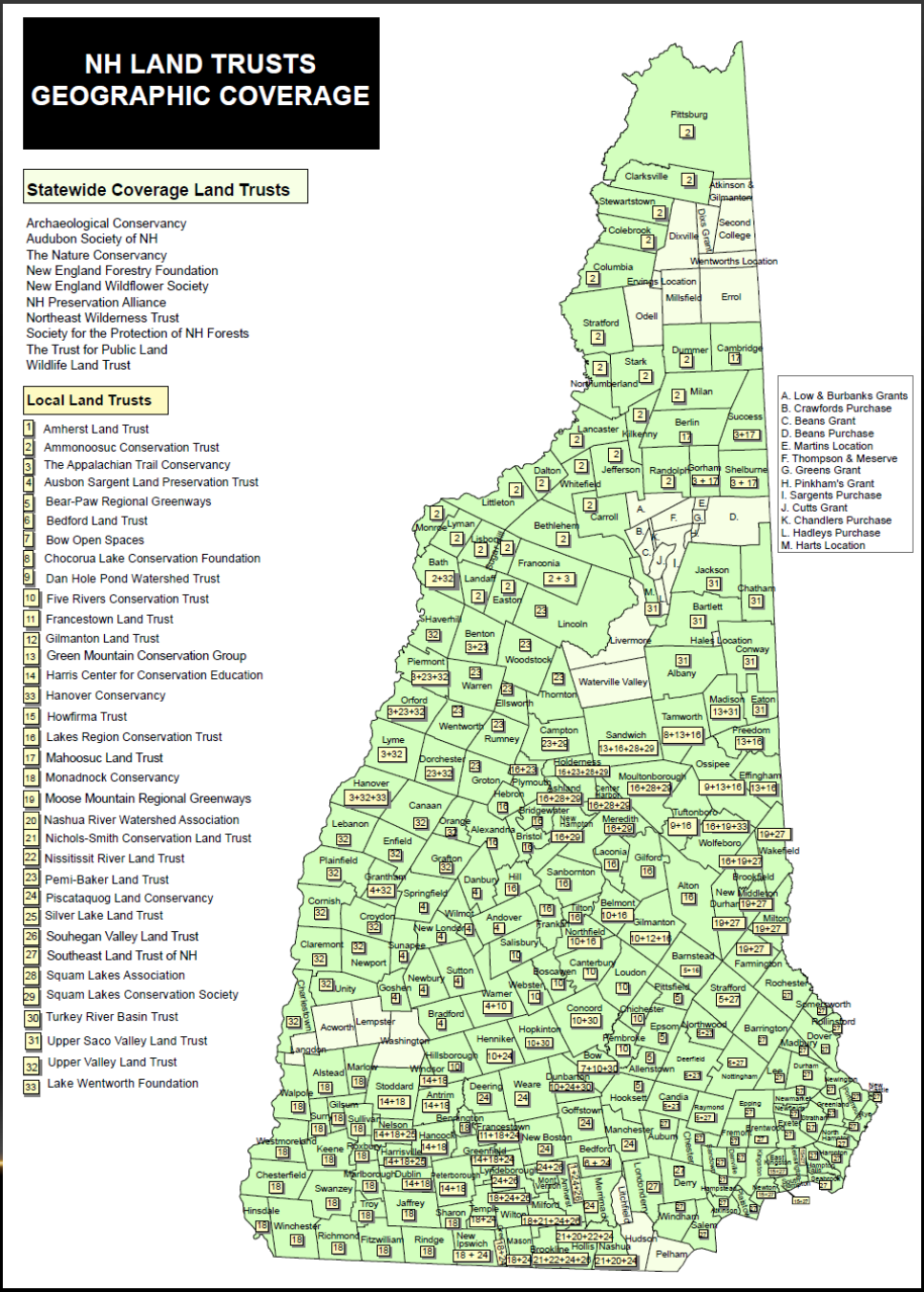
SQUAM LAKES ASSOCIATION



Sources: images-of-new-hampshire-history.com/, unionleader.com, Squam Lakes Association, NHLTC

PARTNERING

- Land Trusts: NH Land Trust Coalition – nhltc.org
- Conservation Commissions
- Public Water Systems



POTENTIAL SOURCES OF MATCH – GRANT PROGRAMS

- NH Land and Community Heritage Investment Program (LCHIP)
- NHDES: Aquatic Resource Mitigation Program (ARM)
- NHDNCR: Forest Legacy Program
- USDA NRCS: Agricultural Land Easements and Wetland Reserve Easements
- NH State Conservation Committee: “Moose Plate” Program
- Great Bay Resource Protection Partnership: Land Protection Transaction Grant Program
- NHDES: Local Source Water Protection Grant Program (transaction costs)

ELIGIBLE WATER SUPPLY LANDS

Categories of water supply lands	Land in Each Category		Percent Permanently Conserved*	Percent Developed**	Unprotected, Undeveloped Land	
	Acres	% of State			Acres	% of State
Water supply watersheds	4,136,020	70	27	6.8	2,762,963	47
Hydrologic Areas of Concern (HACs)	**454,755**	**7.7**	**37**	**10**	**241,014**	**4.1**
Wellhead Protection Areas (WHPAs)	**387,529**	**6.5**	**11**	**19**	**266,496**	**4.5**
Stratified-Drift Aquifers (SDAs)	711,717	12	13	23	451,962	7.6
High-Yield SDAs (>= 1,000 ft^2/day)	**166,448**	**2.8**	**14**	**25**	**102,434**	**1.7**
High-Priority Water Supply Lands	**930,138**	**16**	**24**	**15**	**561,930**	**9.5**

ELIGIBLE LAND

- Wellhead protection areas (WHPAs)
- Hydrologic areas of concern (HACs)
- Protecting a future water supply source
  - 9 evaluation criteria
  - Determined by Advisory Commission

CONDITIONS

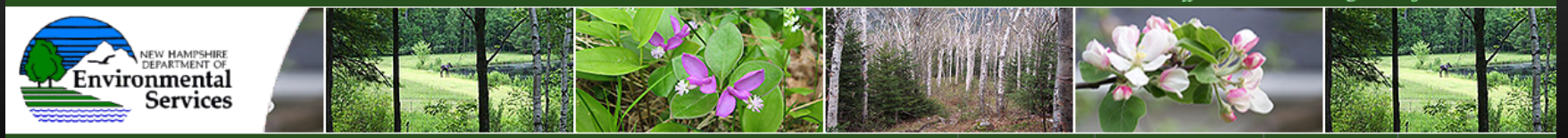
- Permanent protection
- Not contaminated
- Annual stewardship monitoring reports
- Agricultural land protecting surface sources: vegetated buffer
- If not protecting existing source: preserve right to site a future source

EVALUATION CRITERIA

1. Support for the project expressed by affected municipalities and public water systems.
2. Source water protection currently in place by any PWS whose source will be protected.
3. Whether a land conservation plan identifies the subject parcel(s) as high priority for conservation specifically for water supply protection.
4. The proximity of the project to a water supply well or intake.
5. Frontage on rivers, streams, tributaries, and other surface waters for projects related to surface water source protection.
6. The type of water system whose source is to be protected (municipal, community, etc.).
7. The population served by the water system.
8. The number of sources to be protected.
9. The total acreage of eligible land included in the project (including match properties).
10. The value of match (percentage of total project cost) in excess of required match.
11. Project readiness

FUTURE SOURCES - EVALUATION CRITERIA

- PWS or municipality identified need to protect parcel for future source
- Need for future source demonstrated
- Evaluation of options points to subject source/parcel
- Pump test and water quality data demonstrate value
- Feasible to connect to distribution system
- Substantial financial commitment to developing this source
- Preliminary WHPA delineation
- Likely to be approvable as new source
- Water development rights will go to PWS or municipality



OneStop Data Mapper

Welcome

Welcome to the new NHDES OneStop Data Mapper, a viewer displaying OneStop data in an interactive map format. The mapper replaces the NHDES OneStop Web Geographic Information System (GIS). The Onestop Data Mapper is maintained by NHDES and NH GRANIT.

New Features

- User-friendly design
- Ability to bookmark locations
- Download GIS data

Helpful Links

- OneStop Data Mapper Intro Video
- OneStop Data Mapper User Guide
- OneStop Data Mapper Tools and Functions
- OneStop Data Mapper FAQs
- List of OneStop Data Mapper Layers and Metadata
- Accessing and Printing Alteration of Terrain Screening Layers

Access to Data

Most OneStop GIS data is publicly available for viewing and download in the OneStop Data Mapper, except for secure water supply data. Users interested in viewing secure data in the mapper or receiving GIS files must register at the OneStop Data Retrieval/Data Provider Registration Form. Users already approved may login by clicking the icon below.

Secure Water Supply Data:

- Groundwater Classification Areas GAA
- Public Water Supply Wells
- Registered Water Users
- Source Water Protection Areas
- Wellhead Protection Areas
- Water Supply Intake Protection Areas
- Water Well Inventory

Start NHDES OneStop Data Mapper

https://www4.des.state.nh.us/onestopdatama

DES Master Page

File Edit View Favorites Tools Help

NH General Court - Bill St... | NH DWG Trust Fund | My Drive - Google Drive | Google | 7-Day Forecast for Latitud... | The EPA Blog | Web Slice Gallery

an official NEW HAMPSHIRE government website

DES Home | OneStop Home | A to Z List | OneStop Contact

OneStop Data Mapper

User Login

You may enter the OneStop Data Mapper as an unregistered guest to view public data by selecting Enter as Guest below.

A login is required to view secure water supply data in the OneStop Data Mapper. To obtain a login, register at the OneStop Data Retrieval/Data Provider Registration Form. Users already approved for access may sign in below.

Enter User Information

☐ Enter as NHDES Staff.
(with full access rights)

* User Name:

* PIN :

* Password :

LOGIN

Forgot your password?

Need help logging in?

Disclaimer

Please note that the data presented is under constant revision as new sites or facilities are added. The data may not contain all of the potential or existing sites or facilities. NHDES is not responsible for the use or interpretation of this information. Not intended for legal purposes.

New Hampshire Department of Environmental Services | PO Box 95 | 29 Hazen Drive | Concord, NH 03302-0095
603.271.3505 | TDD Access: Relay NH 1.800.735.2964 | Hours: M-F, 8am-4pm

The Department of Environmental Services is dedicated to making more environmental information more readily available to more people while maintaining user confidence in the information. The information is the best available according to the procedures and

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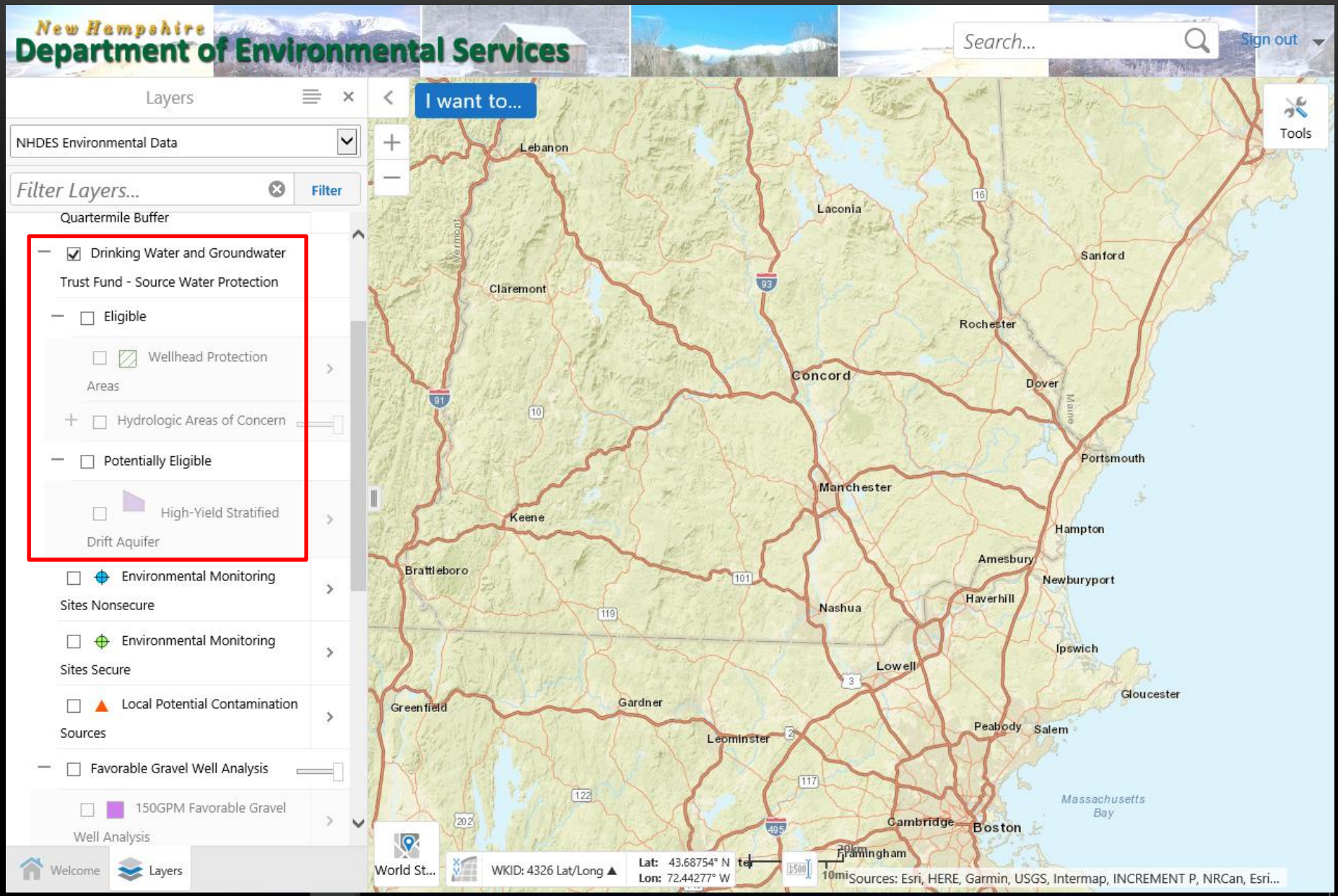
4/5/2018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Quartermile Buffer
Drinking Water and Groundwater Trust Fund - Source Water Protection
Eligible
Wellhead Protection Areas
Hydrologic Areas of Concern
Potentially Eligible
High-Yield Stratified Drift Aquifer
Environmental Monitoring Sites Nonsecure
Environmental Monitoring Sites Secure
Local Potential Contamination Sources
Favorable Gravel Well Analysis
150GPM Favorable Gravel Well Analysis
Welcome
Layers
World St...
WKID: 4326 Lat/Long
Lat: 43.68754° N
Lon: 72.44277° W
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri...
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Laconia
Sanford
Claremont
Rochester
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Portsmouth
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Hampton
Amesbury
Newburyport
Brattleboro
Haverhill
Nashua
Ipswich
Lowell
Gloucester
Greenfield
Gardner
Peabody
Salem
Leominster
Massachusetts Bay
Cambridge
Boston
Framingham
Vermont
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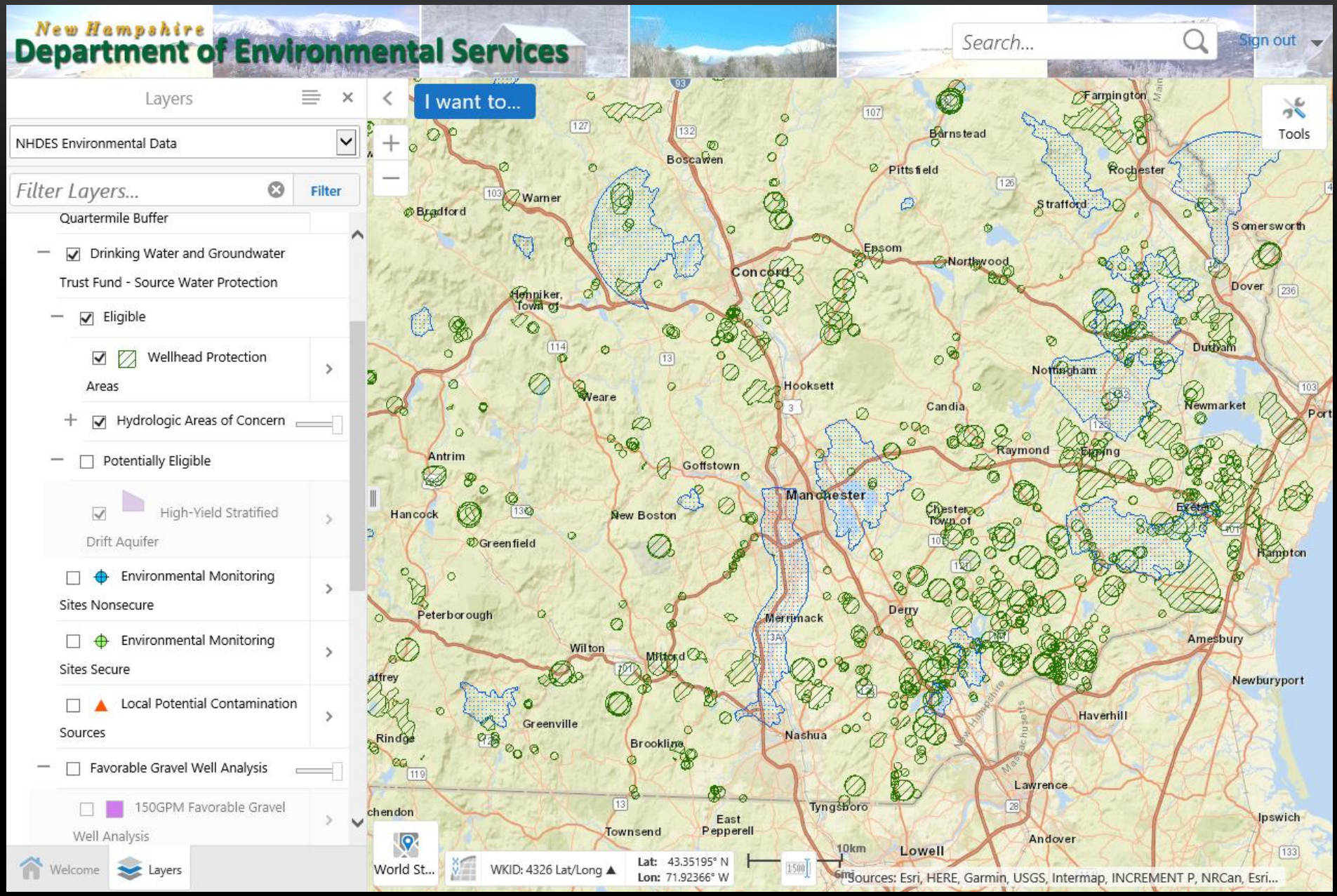
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150GPM Favorable Gravel
Well Analysis
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WKID: 4326 Lat/Long
Lat: 43.35195° N
Lon: 71.92366° W
10km
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Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri...
Farmington
Barnstead
Boscawen
Pittsfield
Rochester
Warner
Bradford
Strafford
Somersworth
Epsom
Northwood
Concord
Dover
Henniker, Town of
Durham
Nottingham
Hooksett
Weare
Candia
Newmarket
Raymond
Epping
Antrim
Goffstown
Manchester
Hancock
New Boston
Chester, Town of
Exeter
Greenfield
Hampton
Peterborough
Merrimack
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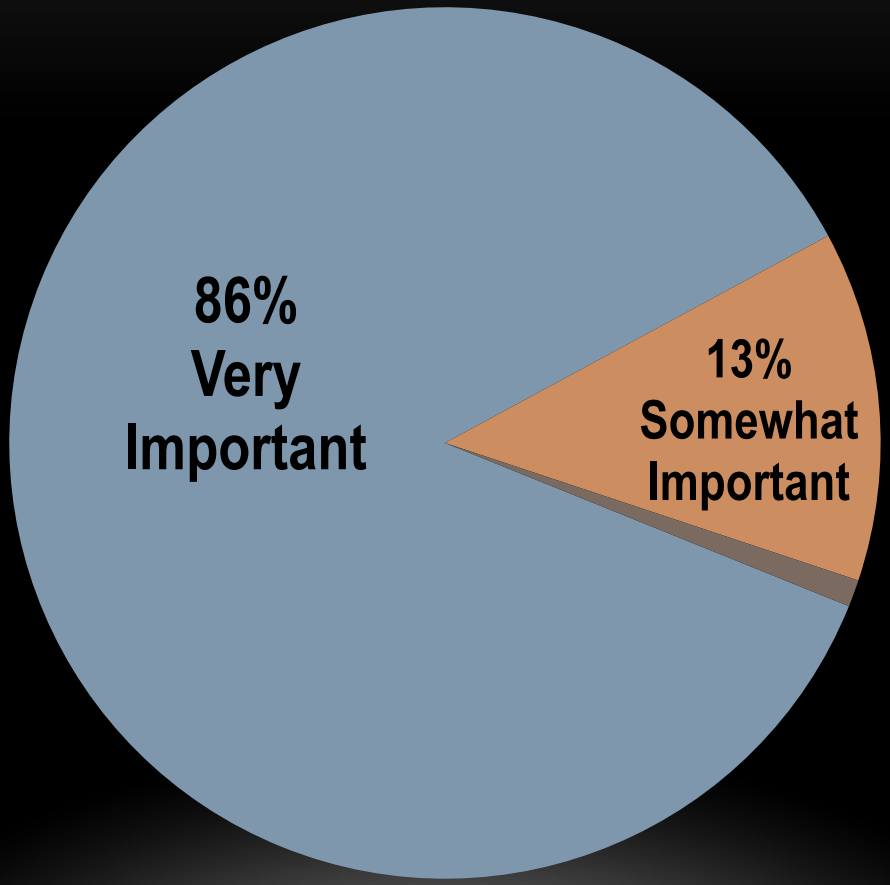
Amesbury
Wilton
Milford
Newburyport
Greenville
Nashua
Haverhill
Brookline
Lawrence
Tyngsboro
East Pepperell
Townsend
Ipswich
Andover
Lowell

PROCESS

- Pre-applications accepted – now
- Pre-applications due – June 28
- Eligibility determination – by August 12
- Funding applications due – September 13
- Site visits, review panel
- Funding decision – December 10

Source: iessi via Flickr.com

PUBLIC SUPPORT FOR LAND CONSERVATION



Source: NH Conservation Attitude Survey, 2012

Source: Tama66 via Pixnio.com